

INSTRUCTION BOOK

RECEIVER

75S-1



COLLINS RADIO COMPANY



COLLINS AMATEUR EQUIPMENT GUARANTEE

The Collins Amateur equipment described herein is sold under the following guarantee:

Collins agrees to repair or replace, without charge, any equipment, parts, or accessories which are defective as to design, workmanship, or materials, and which are returned to Collins at its factory, transportation prepaid, provided:

- (a) Buyer has completed and returned to Collins promptly following his purchase the Registration Card included in the Instruction Book furnished with the equipment.
- (b) Notice of the claimed defect is given Collins within 90 days from the date of purchase and goods are returned in accordance with Collins instructions.
- (c) Equipment, accessories, tubes, and batteries not manufactured by Collins or from Collins designs are subject to only such adjustments as Collins may obtain from the supplier thereof.
- (d) No equipment or accessory shall be deemed to be defective if, due to exposure or excessive moisture in the atmosphere or otherwise after delivery, it shall fail to operate in a normal and proper manner.
- (e) Any failure due to use of equipment in excess of that contemplated in normal amateur operations shall not be deemed a defect within the meaning of these provisions.

The guarantee of these paragraphs is void if equipment is altered or repaired by others than Collins or its authorized service center.

No other warranties, expressed or implied, shall be applicable to said equipment, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements contained in these paragraphs. In no event shall Collins have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials or from any other cause.

IMPORTANT! It is necessary that the business reply card included herewith be filled out and mailed to the Company promptly in order for this guarantee to be effective.

HOW TO RETURN MATERIAL OR EQUIPMENT.

If, for any reason, you should wish to return material or equipment, whether

under the guarantee or otherwise, you should notify Amateur Sales, giving full particulars including the details listed below, insofar as applicable. If the item is thought to be defective, such notice must give full information as to nature of defect and identification (including part number if possible) of part considered defective. (With respect to tubes we suggest that your adjustments can be speeded up if you give notice of defect directly to the tube manufacturer.) Upon receipt of such notice, Collins will promptly advise you respecting the return. Failure to secure our advice prior to the forwarding of the goods or failure to provide full particulars may cause unnecessary delay in handling of your returned merchandise.

ADDRESS:

INFORMATION NEEDED:

Collins Radio Company
Customer Return Goods Department
Cedar Rapids, Iowa

- (A) Type number, name, and serial number of equipment
- (B) Date of delivery of equipment
- (C) Date placed in service
- (D) Number of hours of service
- (E) Nature of trouble
- (F) Cause of trouble if known

HOW TO ORDER REPLACEMENT PARTS. When ordering replacement parts, you should direct your order as indicated below and furnish the following information insofar as applicable. To enable us to give you better replacement service, please be sure to give us complete information.

ADDRESS:

INFORMATION NEEDED:

Collins Radio Company
Service Parts Department
Cedar Rapids, Iowa

- (A) Quantity required
- (B) Collins part number (9 or 10 digit number) and description
- (C) Item or symbol number obtained from parts list or schematic
- (D) Collins type number, name, and serial number of principal equipment
- (E) Unit subassembly number (where applicable)

INSTRUCTION BOOK

75S-1 RECEIVER

520 5795 00
5th EDITION, 15 SEPTEMBER 1959

©**COLLINS RADIO COMPANY**
1958, 1959

CEDAR RAPIDS, IOWA, U.S.A.

PRINTED IN THE UNITED STATES OF AMERICA



TABLE OF CONTENTS

Section		Page
I	INSTALLATION	1
1.1	Unpacking	1
1.2	Mounting and Cabling	1
1.3	Initial Checks	1
II	OPERATION	3
2.1	Calibration	3
2.2	Single-Sideband Tuning	3
2.3	AM Tuning	3
2.4	CW Tuning	3
2.5	Operation Outside Amateur Bands	3
2.6	Operation in Transceiver Service with 32S-1 Transmitter	4
2.7	Use of 75S-1 with Other Collins Transmitters	5
2.7.1	75S-1 with KWS-1	5
2.7.2	75S-1 with 32V-3	5
III	PRINCIPLES OF OPERATION	7
3.1	Block Diagram	7
3.2	R-F Circuits	7
3.3	I-F Circuits	7
3.4	A-F Circuits	7
3.5	Oscillator Circuits	7
IV	SERVICE INSTRUCTIONS	8
4.1	General	8
4.2	Signal Tracing	8

SECTION I
Installation

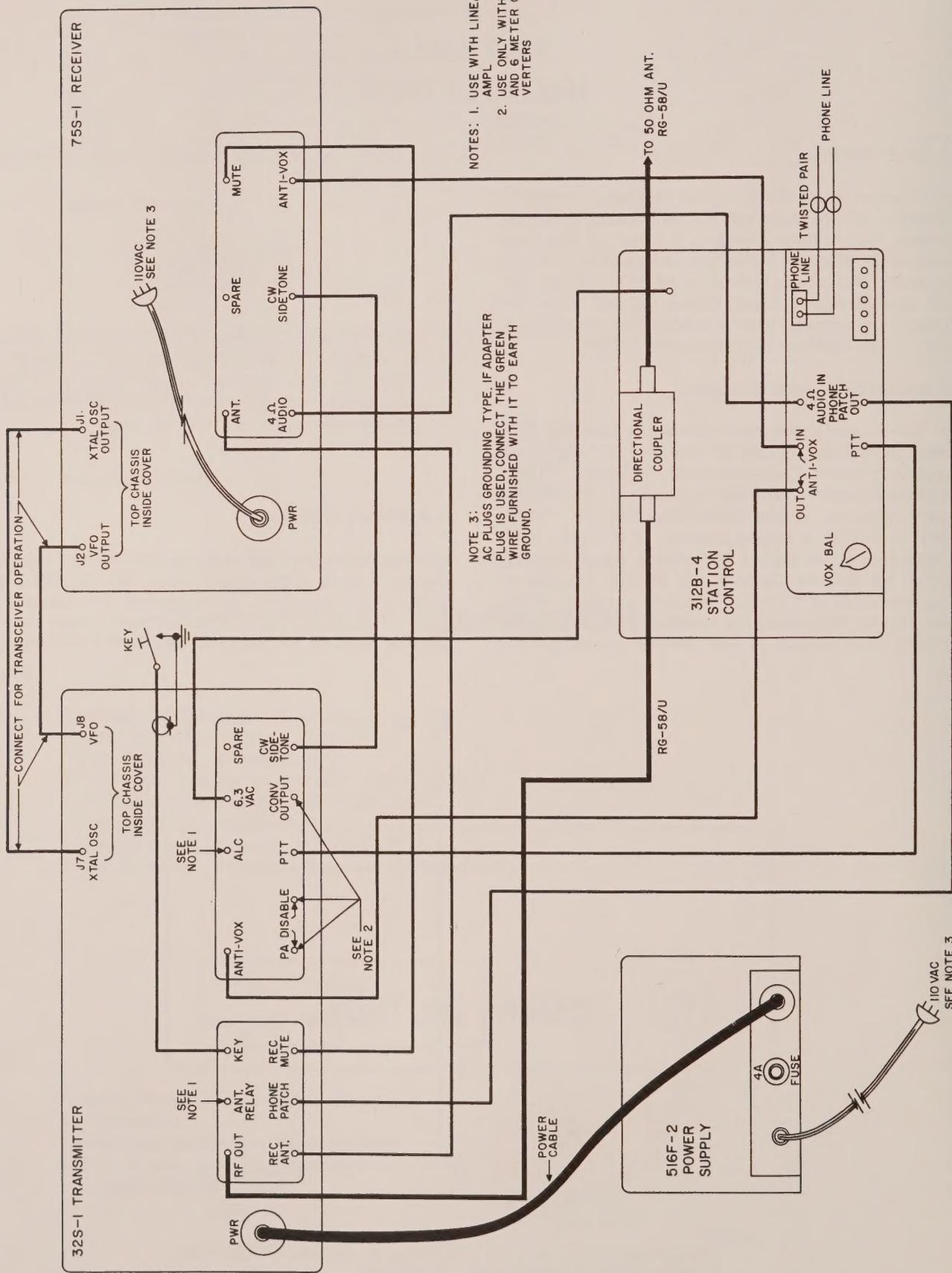


Figure 1-2. Station Interconnections

SECTION II OPERATION

2.1 CALIBRATION.

- a. After making external connections, set controls as shown in figure 2-1.
- b. Set BAND switch (7) to desired frequency band. Set dial to 0, 100, or 200 with tuning knob (3).
- c. Adjust PRESELECTOR (2) for maximum signal or noise output.
- d. Tune back and forth near 0, 100, or 200 until calibrate signal is zero beat.
- e. Adjust zero set knob (10) until dial is calibrated.

2.2 SINGLE-SIDEBAND TUNING.

- a. Set controls as shown in figure 2-1, except set OFF-STBY-OPR-CAL switch (1) to OPR.
- b. Set EMISSION switch (8) to desired sideband.
- c. Peak PRESELECTOR control (2) for maximum signal or noise output.
- d. Tune in signal, and adjust A.F. GAIN (4) for desired audio output level.

To read frequency, add the dial setting to the BAND switch setting. As an example, if the BAND switch is set to 3.8 and the dial is set to 5, the frequency is 3.805 mc. If the BAND switch is set to 3.8 and the dial to 170, the frequency is 3.970 mc.

2.3 AM TUNING.

- a. Set controls as in paragraph 2.2, step a.
- b. Set EMISSION switch (8) to AM.
- c. Peak PRESELECTOR control (2) for maximum signal or noise output.
- d. Tune in signal, and adjust A.F. GAIN (4) for desired audio output level.

2.4 CW TUNING.

- a. Set up and tune as in paragraph 2.2.
- b. CW may be tuned in either USB or LSB position of the EMISSION switch. True frequency of received CW signal can be read on dial when signal is zero beat, but receiver output amplitude at zero beat is reduced by the attenuation of the filter. With the 2.1-kc filter supplied, the audible CW beat note frequency is 1350 cps when the signal is centered in the filter passband. This beat note is tunable with the receiver tuning control to a minimum of 500 cps. When the accessory 500-cps filter is used, but the matching bfo crystal is not used, the CW beat note will be 1350 cps with the signal centered in the passband. When both the accessory 500-cps filter and its matching bfo crystal are used, the CW beat note is approximately 800 cps with the signal centered in the filter passband, and zero beat cannot be heard. Without the accessory filter, the receiver is dead when the EMISSION switch is in CW position.
- c. To copy CW with avc, set R.F. GAIN to maximum and adjust A.F. GAIN for desired level. If avc action is not desired, reduce R.F. GAIN setting until S-meter does not kick with signals, and leave A.F. GAIN set as above. This method of operating results in optimum signal-to-noise ratio as well as more pleasing sidetone level. The practice of operating with A.F. GAIN at maximum and adjusting R.F. GAIN will degrade signal-to-noise performance of the receiver.

2.5 OPERATION OUTSIDE AMATEUR BANDS.

All amateur bands are covered except the 10-meter band for which only one crystal is furnished (for 28.5 to 28.7 mc). Two extra sockets are provided for additional crystals in this band. Figure 2-2 gives calibration curves for PRESELECTOR logging scale.

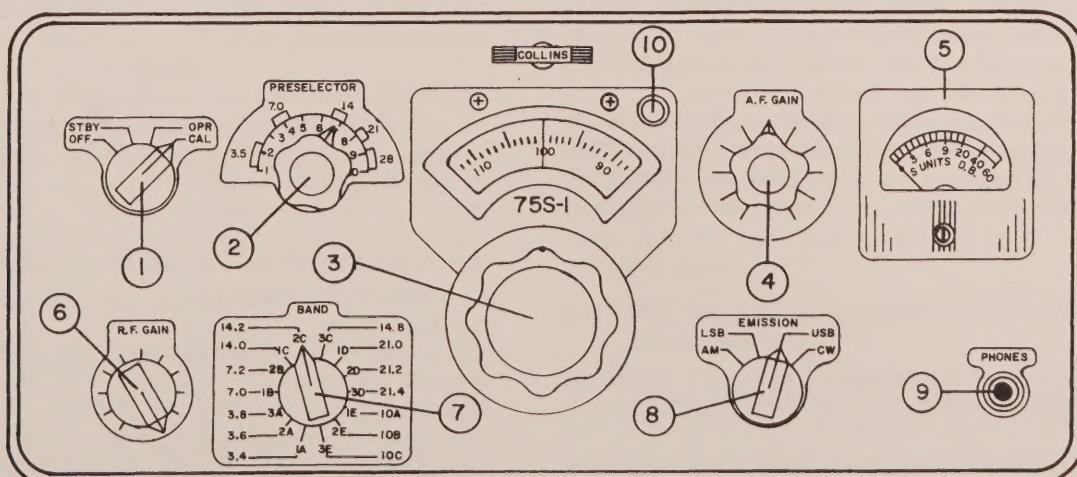


Figure 2-1. Panel Controls

SECTION II
Operation

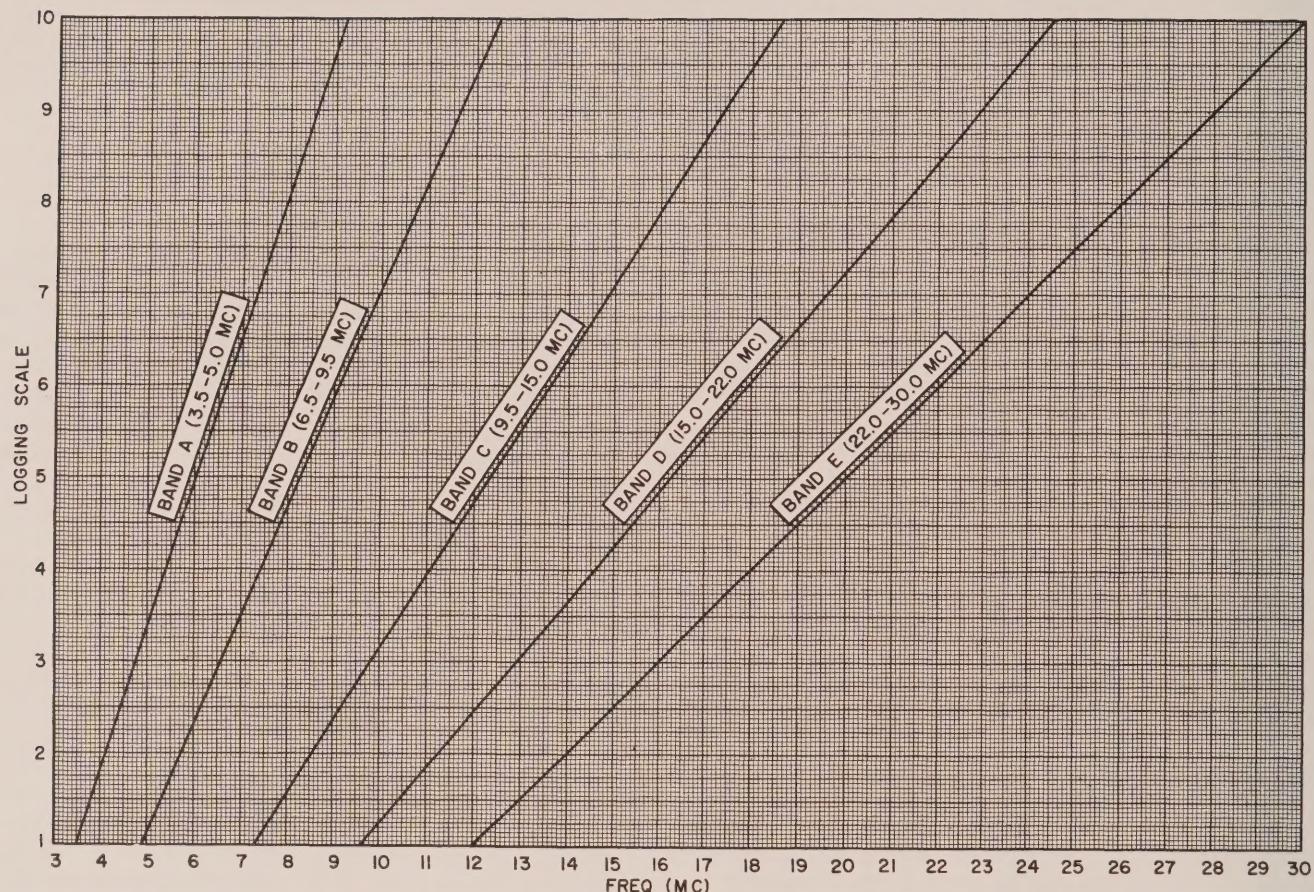


Figure 2-2. Preselector Calibration Curves

The 75S-1 Receiver can be operated at other frequencies outside the specified amateur bands or at other 10-meter frequencies by plugging the proper crystals into the mounting board. Select these crystals as follows:

a. If the lower edge of the desired 200-kc band is less than 11.800 mc, the required crystal frequency is equal to the lower edge of the desired band plus 3.155 mc. As an example, if the desired band is 4.0 to 4.2 mc, 4.0 mc plus 3.155 mc equals 7.155 mc.

b. If the lower edge of the desired 200-kc band is 12.00 mc or higher, the required crystal frequency is half the sum of the lower desired band edge and 3.155 mc. As an example, if the desired band is 14.4 mc to 14.6 mc,

$$\frac{14.4 + 3.155}{2} = 8.7775 \text{ mc.}$$

The plate circuit of the oscillator is tuned to twice the crystal frequency when crystal frequencies are this high.

c. Substitute or extra crystals should be plugged into the appropriate socket on the mounting board according to the best location in one of the five bands. The example cited in step b above should place the crystal

in one of the sockets marked C. If two additional 10-meter crystals are used, they should be plugged into the sockets marked E. Table 2-1 lists crystal socket designations, switch positions (BAND), crystal frequencies furnished, and frequency range limitations. Figure 2-3 shows crystal socket locations. Extra crystals available are listed in section VI, Parts List.

NOTE

Do not attempt operation outside the band limits specified for BAND switch positions as given in table 2-1.

2.6 OPERATION IN TRANSCIEVER SERVICE WITH 32S-1 TRANSMITTER.

a. Using patch cables furnished with the 32S-1, connect the receiver vfo and high-frequency oscillator outputs to the transmitter as follows:

b. Remove the 100-ohm load plug from the XTAL OSC OUTPUT jack, J1, on the receiver, and connect one of the patch cables from J1 through the rear of the receiver and transmitter cabinets and into the XTAL OSC INPUT jack, J7, on transmitter chassis.

TABLE 2-1. CRYSTAL FREQUENCIES AND OPERATING BANDS

BAND SWITCH POSITION	FREQUENCY BAND	CRYSTAL SUPPLIED	CRYSTAL SOCKET CONNECTED	TOTAL COVERAGE
1A - 3.4	3.4 - 3.6 mc	6.555 mc	1A	
2A - 3.6	3.6 - 3.8 mc	6.755 mc	2A	
3A - 3.8	3.8 - 4.0 mc	6.955 mc	3A	
1B - 7.0	7.0 - 7.2 mc	10.155 mc	1B	
2B - 7.2	7.2 - 7.4 mc	10.355 mc	2B	
1C - 14.0	14.0 - 14.2 mc	8.5775 mc	1C	
2C - 14.2	14.2 - 14.4 mc	8.6775 mc	2C	
3C - 14.8	14.8 - 15.0 mc	8.9775 mc	3C	
1D - 21.0	21.0 - 21.2 mc	12.0775 mc	1D	
2D - 21.2	21.2 - 21.4 mc	12.1775 mc	2D	
3D - 21.4	21.4 - 21.6 mc	12.2775 mc	3D	
1E - 28A	28.5 - 28.7 mc	15.8275 mc	2E	
2E - 28B	As selected	Not supplied	2E	
3E - 28C	As selected	Not supplied	3E	
				E 22.0 - 30.0 mc

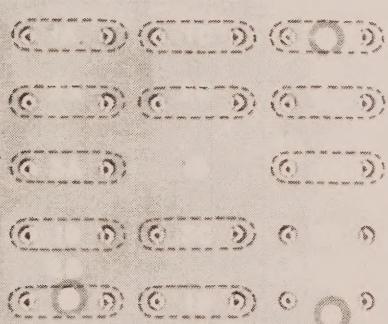


Figure 2-3. Crystal Socket Locations

c. Connect the other patch cable between the VFO OUTPUT jack, J2, and VFO INPUT jack, J8, on transmitter chassis. Make sure all other interconnections shown in figure 1-1 are made.

d. Be sure both transmitter and receiver EMISSION switches are set to the same sideband position. Be sure both BAND switches are in the same position.

e. Turn the transmitter FREQ CONTROL switch to REC VFO position. The transmitter dial light goes out, and the receiver oscillators control the transmitter frequency.

f. Tune receiver to desired dial frequency or desired signal, peak the receiver PRESELECTOR and the transmitter EXCITER TUNING controls. If both these controls are peaked near the middle of the 200-kc band, the equipments may be operated across the selected band without further peaking. However, either or both may require repeaking on the lower frequency bands.

g. Tune and load the transmitter power amplifier as in normal operation. Switching FREQ CONTROL

back to TRANS VFO position will allow separate operation of the two units within the 200-kc band in use. Do not attempt this type of operation on different 200-kc bands; the receiver high-frequency crystal oscillator is controlling injection frequency to the transmitter second mixer.

WARNING

When operating 75S-1 and 32S-1 in transceiver service, do not operate transmitter while receiver is tuned outside band limits; transmitted signal will be out of band. In this service, transmit frequency is always the same as receive frequency. Keep receiver tuned within band, or return receiver to frequency within band before transmission.

h. To restore both receiver and transmitter to normal operation, remove the two patch cables connecting oscillator signals, replace P1 in J7 on the transmitter chassis, and replace the 100-ohm load plug, P1, in the XTAL OSC OUTPUT jack, J1, on receiver chassis.

2.7 USE OF 75S-1 WITH OTHER COLLINS TRANSMITTERS.

2.7.1 75S-1 WITH KWS-1. - Mute by connecting pin 5 and 6 on J102 (Rec. Disable) to MUTE jack on 75S-1. Connect 75S-1 ANTIVOX jack to 500-ohm audio (pin 7) on J102 of KWS-1.

2.7.2 75S-1 WITH 32V-3. - Connect MUTE jack on 75S-1 to receiver disabling (pins 24 and 25).

SECTION III
Principles of Operation

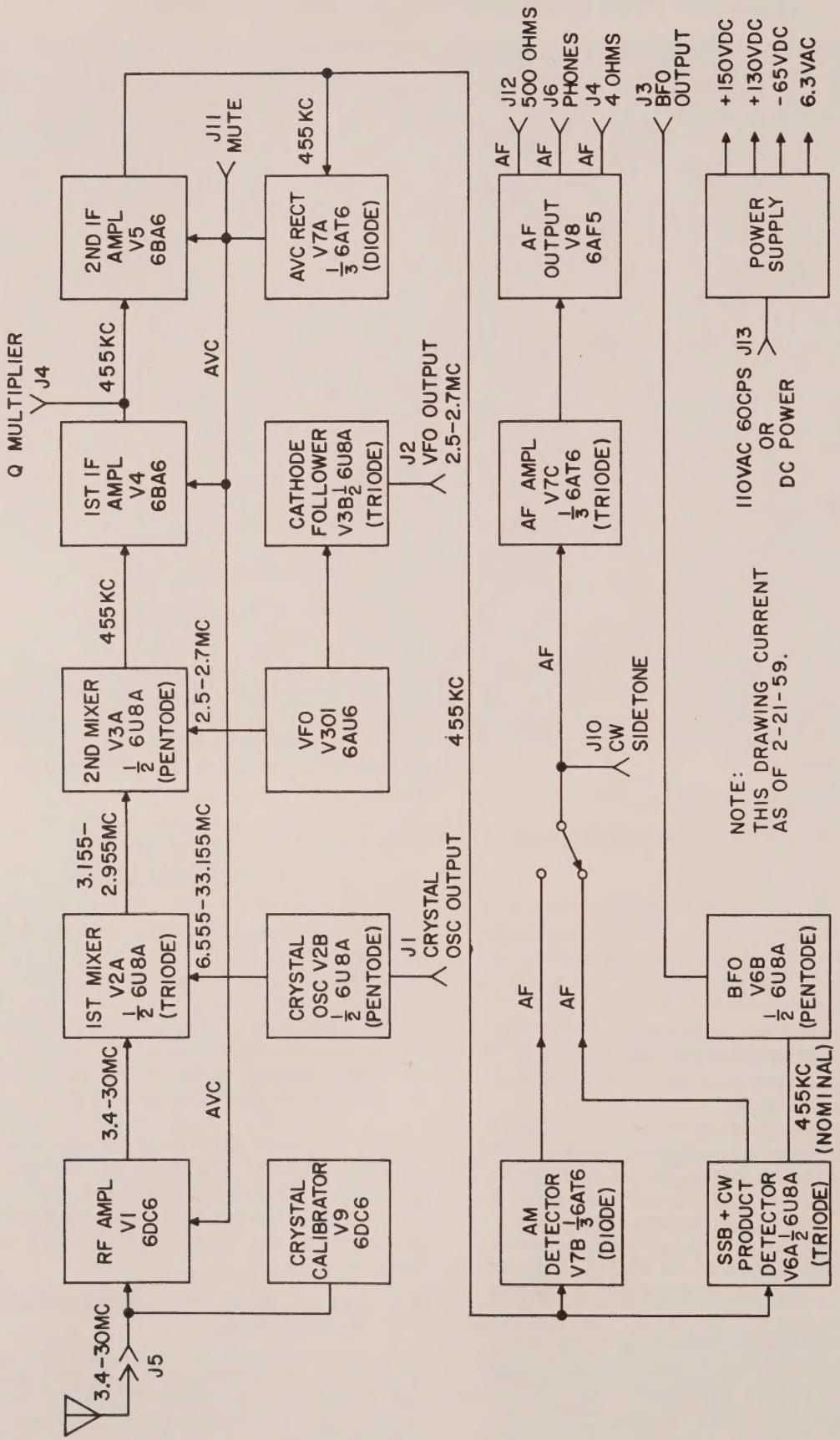


Figure 3-1. Block Diagram

SECTION III PRINCIPLES OF OPERATION

3.1 BLOCK DIAGRAM.

Figure 3-1 is a block diagram of 75S-1 Receiver. The 75S-1 is a double-conversion receiver with crystal-controlled high-frequency oscillator and band-pass i-f. Separate detectors for AM and SSB are provided. Outputs from the high-frequency oscillator and the vfo are available at jacks on the chassis for controlling frequencies of companion 32S-1 Transmitter when used in transceiver service. Figure 7-1 is a schematic diagram of the receiver.

3.2 R-F CIRCUITS.

One set of slug-tuned coils is used to cover the entire tuning range with appropriate capacitance switched in by BAND switch sections S2, S3, and S4. The r-f amplifier tube, V1, is a type 6DC6. Its output is applied to the grid of the first mixer, V2A. High-frequency injection signal is coupled from the crystal oscillator to the cathode of V2A. On any band selected, the crystal oscillator output frequency is 3.155 mc higher than the lower edge of the desired band. The difference between the crystal oscillator frequency and the desired frequency is between 3.155 mc and 2.955 mc, or the band-pass i-f frequency.

3.3 I-F CIRCUITS.

The 3.155- to 2.955-mc variable i-f frequency is coupled through a band-pass network, consisting of T1 and L4, to the grid of the second mixer, V3A. This mixer is the pentode section of a type 6U8A with vfo injection signal at its cathode. Depending on the setting of EMISSION switch S2, the 455-kc second mixer output is coupled through CW filter FL1 (not supplied with receiver), AM i-f transformers T8 and T7, or SSB filter FL2 to the first i-f amplifier, V4. The i-f amplifiers, V4 and V5, are conventionally coupled. The second i-f amplifier, V5, also operates the S-meter.

3.4 A-F CIRCUITS.

Output from the second i-f amplifier, V5, is coupled from transformer T2 to the grid of CW/SSB product

detector, V6A, and to the diodes of V7. Beat-frequency oscillator injection signal is coupled to the cathode of the product detector. Product detector output is filtered and connected to EMISSION switch section S8 where it is selected and fed to the grid of the triode section of V7. The AM audio signal from one of the V7 diode plates is also connected to S8. Output from the triode amplifier section of V7 is coupled to the audio output tube, V8, from which it may be fed to phones, speaker, or phone patch by plugging into J6, J8, or J12, respectively.

3.5 OSCILLATOR CIRCUITS.

The receiver contains four oscillators. They are crystal calibrator, crystal oscillator, vfo and bfo. The 100-kc crystal calibrator, V9, is a type 6DC6 tube. Its output is coupled to the antenna coil, T5. The high-frequency crystal oscillator, V2B, is the pentode section of 6U8A. For high-frequency injection up to 14.955 mc, the oscillator operates on crystal fundamental frequencies. For injection frequencies higher than 14.955 mc, the oscillator doubles the crystal frequency in its plate circuit. Oscillator output is available at J1 for frequency control of companion transmitter such as the 32S-1. Unless this jack is connected to external equipment, the load resistor and plug, P1, is left plugged into J1 to provide proper oscillator plate circuit impedance. Instructions for calculating crystal frequencies required for desired bands are given in section II. The vfo is a 70K-2 Oscillator installed as an integral unit. Its frequency range is 2.5 to 2.7 mc. Oscillator output is fed to the cathode of the second mixer and to the grid of a cathode follower, V3B. The cathode follower (triode section of a 6U8A) isolates the vfo from load variations when a companion transmitter, such as the 32S-1, is connected to it in transceiver service. The bfo is crystal controlled by one of two crystals for CW and SSB signals. If the accessory CW filter is used, a matched crystal is installed. EMISSION switch section S9 selects Y16 for CW and USB positions and Y15 for LSB position. Output from the bfo is connected to the product detector and to the BFO TEST jack, J3.

SECTION IV SERVICE INSTRUCTIONS

4.1 GENERAL.

Included in this section are signal tracing procedures, alignment procedures, and voltage and resistance measurements.

4.2 SIGNAL TRACING.

Table 4-1 lists significant test points and normal signal levels. All r-f and i-f measurements were made by connecting a vacuum-tube voltmeter to the

avc bus, increasing signal generator output until the avc threshold is reached, and reading the signal generator output voltage from the attenuator of the signal generator. The avc threshold voltage is the point at which the d-c vtvm indication just changes with increased signal level. Receiver was tuned to 14.1 mc for these measurements and signal generator injected at indicated test points. Signal voltage values are taken from signal generator output attenuator. All values are nominal and may vary widely without degrading performance.

TABLE 4-1. SIGNAL LEVELS

TEST POINT	FREQUENCY	VOLTAGE
V6A-9	455 kc	7.1 millivolts
V6A-8	455 kc	1.0 volt
V7-5 and V7-6	455 kc	2.2 volts
V5-5	455 kc	3.3 volts
V5-1	455 kc	44.0 millivolts
V4-5	455 kc	44 v millivolts
V4-1	455 kc	240 microvolts
V3A-6	455 kc	700 microvolts
V3A-7	2.5-2.7 mc	*2.0-2.5 volts
V3A-2	3.155-2.955 mc	50 microvolts
V2A-1	3.155-2.955 mc	80 microvolts
V2A-8	High-Frequency Oscillator Injection Signal (17.155 mc)	*0.8-1.5 volts
V2A-9	14.1 mc	18 microvolts
V1-5	14.1 mc	100 microvolts
V1-1	14.1 mc	8 microvolts
J5 (ANT)	14.1 mc	0.8 microvolt

* Measured with vacuum-tube voltmeter.

4.3 VOLTAGE AND RESISTANCE MEASUREMENTS.

Table 4-2 lists voltage and resistance measurements on all tube sockets of the 75S-1 except that of the vfo tube, V301. *Do not open* the oscillator can. Measurements were made under the following conditions:

a. All measurements with vtvm and with all tubes in sockets. Unless otherwise noted in table, all measurements made with R.F. GAIN at maximum, A.F. GAIN

at minimum, EMISSION switch in USB position, BAND switch in 14.2 position, vfo dial at 100, and OFF-STBY-OPR-CAL switch in OPR position.

b. Resistances of less than one ohm listed as zero.

c. Voltage measurements made with the equipment operating.

d. Resistance measurements made with power supply connection removed from J13.

e. All measurements made from socket pin to ground.

TABLE 4-2. VOLTAGE AND RESISTANCE MEASUREMENTS

TUBE		PIN NUMBER								
		1	2	3	4	5	6	7	8	9
V1	D-C V A-C V Ohms	+0.6 6 meg	0 0	0 0	6.3 0	+130 30K**	+72 70K**	0 0		
V2	D-C V A-C V Ohms	+117 30K**	-6 100K	+120 30K**	0 0	6.3 0	+120 30K**	0 0	+3 1000	0 220K
V3	D-C V A-C V Ohms	+110 30K**	0 70	+110 30K**	6.3	0	+110 30K**	+4.3 1000	+4.5 680	+1.6 100K
V4	D-C V A-C V Ohms	-0.7 3.4 meg	0 0	0 0	6.3 0	+130 0	+72 30K**	+1.5 30K**		350
V5	D-C V A-C V Ohms	-0.7 4.2 meg	0 0	0 0	6.3 0	+130 30K**	+71 30K**	+0.55 80		
V6	D-C V A-C V Ohms	+37 60K**	-4.0 1 meg	+60 250K**	6.3 0	0 0	+117 30K**	0 0	+1.4 820	0 1 meg
V7	D-C V A-C V Ohms	+1.0 600K	+2.5 12K	6.3 0	0 0	-0.7 3.3 meg	0 inf	+94 130K**		
V8	D-C V A-C V Ohms	-11.5 220K	0 0	0 0	6.3 0	+125 30K	+120 30K	-11.5 220K		
V9	D-C V A-C V Ohms	-28* 1 meg	+0.6* 1000*	0* 0	6.3* 0	+94* 250K**	+36* 250K**	0* 0		

* OFF-STBY-OPR-CAL switch in CAL position.

** Resistance may vary with diode and electrolytic condition.

SECTION IV
Service Instructions

4.4 ALIGNMENT PROCEDURE. (Refer to figure 4-1.)

4.4.1 455-KILOCYCLE I-F ALIGNMENT.

- a. Remove vfo tube, V301, from socket.
- b. Set EMISSION switch to USB.
- c. Connect signal generator to pin 2 of V3, and increase signal generator output until S-meter shows slight indication (S3). Rock the signal generator frequency if necessary to approximately center in the filter pass band.

NOTE

If a vtvm is available, it may be connected to the avc bus and used as alignment peak indicator.

- d. Adjust the slugs of L6 and T2 for peak indication on S-meter. Reduce signal generator output as necessary to keep S-meter indication low. Repeat L6 and T2 as in any standard alignment procedure.
- e. Replace vfo tube.

4.4.2 BAND-PASS I-F ALIGNMENT.

- a. Set BAND switch to an unused 28-mc position. If all 28-mc crystal sockets are filled, remove one crystal and set BAND switch to that position. This disables the crystal oscillator, V2B. Set EMISSION switch to CW.
- b. Connect a signal generator to the XTAL OSC OUTPUT jack, J1, and set to 3.055 megacycles. Set the receiver tuning dial to 100, and increase signal generator output until signal is heard in speaker.
- c. Make two swamping tools by connecting a 0.01- μ f capacitor in series with a 1000-ohm resistor and connecting alligator clips to the two remaining pigtails.
- d. Connect one swamping network from T1 primary (terminal 1) to ground and the other from L4 (terminal 1) to ground.
- e. Peak the secondary of T1 (top of can) using a Walsco 2543 tuning tool.
- f. Remove both swamping networks and swamp T1 secondary (terminal 3 to ground). Peak T1 primary (bottom of can) and peak L4.
- g. Remove swamping network from T1 secondary. This completes band-pass i-f alignment.

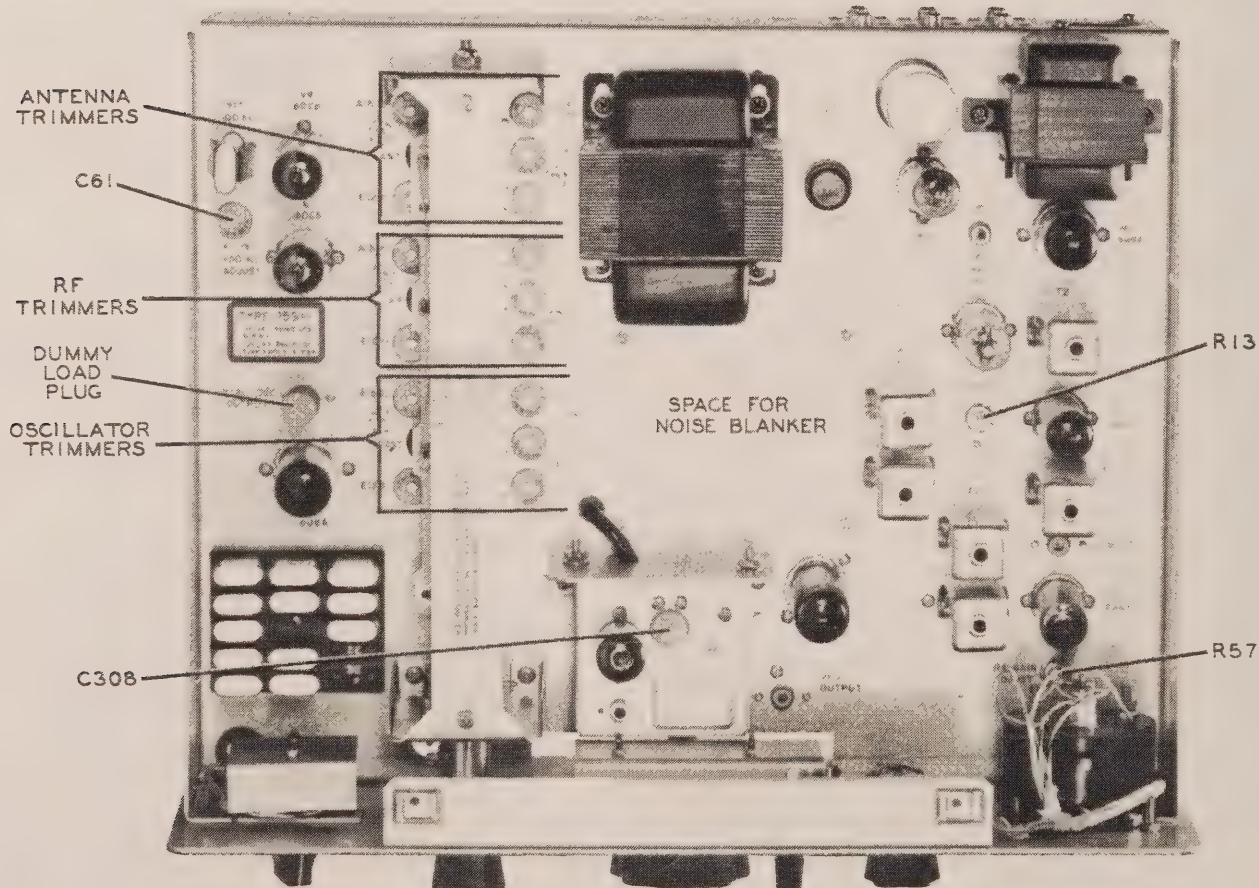


Figure 4-1. Location of Adjustments

4.4.3 R-F CIRCUIT ALIGNMENTS. (Refer to figure 4-1 for trimmer identification.)

- a. Set the PRESELECTOR control to lower edge of the 40-meter band, and check that all slugs are even with the tops of the coil forms. If they are not, adjust with slug-mounting screws on the slug rack.
- b. Set the tuning dial to 100. Set the OFF-STBY-OPR-CAL switch to CAL position.
- c. Make sure the 100-ohm load, P1, is inserted in the XTAL OSC OUTPUT jack, J1. Connect a vtm with r-f probe to J1 under the chassis.
- d. Connect a 47-ohm noninductive resistor from ANTENNA jack J5 to ground.
- e. Set BAND switch to 28A and PRESELECTOR to 9.1 on logging scale.
- f. Peak the OSC E(28) trimmer for maximum vtm indication.
- g. Peak the RF E(28) and ANT E(28) trimmers for maximum S-meter indication.
- h. Set BAND switch to 21.0 and PRESELECTOR to 8.0 on logging scale. Adjust the OSC D(21) trimmer for maximum vtm indication. Adjust RF D(21) and ANT D(21) trimmers for peak S-meter indication.
- i. Set BAND switch to 14.2 and PRESELECTOR to 6.9 on logging scale. Adjust OSC C(14) trimmer for peak vtm indication. Adjust RF C(14) and ANT C(14) trimmers for peak S-meter indication.
- j. Set BAND switch to 7.0 and PRESELECTOR to 3.9 on logging scale. Adjust OSC B(7.0) trimmer for peak vtm reading. Adjust RF B(7.0) and ANT B(7.0) for peak S-meter reading.
- k. Set BAND switch to 3.6 and PRESELECTOR to 1.9 (approximately) on logging scale. Adjust OSC A(3.8) trimmer for peak vtm reading.

NOTE

If necessary, rock the PRESELECTOR control until the oscillator trimmer, OSC A(3.8) (C69), peaks near its midcapacity point.

Adjust RF A(3.8) and ANT A(3.8) for peak S-meter reading. This completes r-f alignments.

4.4.4 VFO SIDEBAND FREQUENCY SHIFT ADJUSTMENT.

- a. Set BAND switch to 3.6 position. Set PRESELECTOR to approximately 1.9 on logging scale. Set EMISSION switch to LSB, and set OFF-STBY-OPR-CAL switch to CAL position. Tune dial near 100 until calibrate signal is zero beat, and do not touch for following procedure.
- b. Switch to USB, and adjust C308 (on vfo) to zero beat.

4.4.5 I-F GAIN AND S-METER ZERO ADJUSTMENTS.

- a. Set receiver to middle of favorite operating band, and peak PRESELECTOR for maximum output. Set R.F. GAIN control (front panel) to maximum clockwise position. Tune calibrated signal generator to same frequency as receiver, and set A.F. GAIN control to maximum counterclockwise position.
- b. Short ANTENNA jack to ground, and adjust S-METER ADJUST (R13) so S-meter reads zero.
- c. Remove short from J5, and apply 100 microvolts from calibrated signal generator. Adjust RF GAIN ADJUST (R57) until S-meter reads S-9.
- d. Repeat steps b and c until S-meter reads zero with J5 shorted to ground and S-9 with 100 microvolts input at J5.

4.4.6 CRYSTAL CALIBRATOR ADJUSTMENT.

- a. Tune WWV to zero beat at 15.0 mc at a time when the station is not transmitting a tone.
- b. Turn the OFF-STBY-OPR-CAL switch to CAL position. Adjust 100 KC ADJUST trimmer, C61, for zero beat of calibrator signal.

SECTION V SPECIFICATIONS

5.1 75S-1 RECEIVER.

The 75S-1 receives single-sideband, CW, or AM signals in all amateur bands between 3.4 and 30.0 mc.

5.2 FREQUENCY COVERAGE.

The receiver coverage is in 14 bands, each 200 kilocycles wide. With crystals furnished, they cover the entire amateur bands of 80 meters, 40 meters, 20 meters, 15 meters, a 14.8- to 15.0-mc band including WWV, and the 28.5- to 28.7-mc portion of the 10-meter band. The two remaining crystal sockets may be used for crystals selected to provide two additional 200-kc bands within the 10-meter band. Other crystals

may be substituted for those furnished to place the receiver at other frequencies throughout the range.

5.3 REQUIREMENTS FOR OPERATION.

The receiver requires a 110-volt, 50- to 60-cps, a-c power source and consumes approximately 90 watts of power from the line. It may be operated mobile from a d-c power supply by using the proper connector. In this service, the receiver requires +150 volts d-c at 125 ma, -70 volts d-c at 5 ma, and 6.0 volts d-c at 5.5 amperes, or 12.0 to 14.0 volts d-c at 2.75 amperes, or 24.0 to 28.0 volts d-c at 1.375 amperes. The 75S-1 should be connected to a speaker with 4-ohm voice coil. Any type headphones may be used.

SECTION V
Specifications

5.4 SPECIFICATIONS.

Frequency range	3.4 to 30.0 megacycles. With crystals furnished, bands are as follows: 3.4 to 3.6 mc, 3.6 to 3.8 mc, 3.8 to 4.0 mc, 7.0 to 7.2 mc, 7.2 to 7.4 mc, 14.0 to 14.2 mc, 14.2 to 14.4 mc, 14.8 to 15.0 mc, 21.0 to 21.2 mc, 21.2 to 21.4 mc, 21.4 to 21.6 mc, and 28.5 to 28.7 mc.
Mode	Single sideband (selectable), CW, or AM.
Sensitivity	One microvolt for 15-db signal-plus-noise to noise ratio for SSB operation.
Selectivity	SSB: 2.1 kc at 6 db down, 4.2 kc at 60 db down. CW: 0.5 kc at 6 db down, 1.0 kc at 60 db down. (with accessory filter) AM: 4.5 kc at 6 db down, 25 kc at 60 db down.
Spurious response	Image rejection better than 50 db. Internal spurious signals below one microvolt equivalent antenna input.
Frequency stability	After warmup, stable to within 100 cps.
Dial accuracy (after midband calibration)	Better than one kc on any band.
Dial backlash	Less than 50 cycles.
Output level	0.25 watt at avc threshold. 1.8 watts maximum.
Size	6-9/16 inches high, 14-3/4 inches wide, 11-1/2 inches deep.
Weight	20 pounds.

5.5 TUBE, FUSE, AND SEMICONDUCTOR COMPLEMENT.

TABLE 5-1. TUBES, FUSES, AND SEMICONDUCTORS

SYMBOL	FUNCTION	TYPE	SYMBOL	FUNCTION	TYPE
V1	R-f amplifier	6DC6	V8	A-f output power amplifier	6BF5
V2A	First mixer	1/2 6U8A	V9	Crystal calibrator	6DC6
V2B	Crystal oscillator	1/2 6U8A	V301	Variable-frequency oscillator	6AU6
V3A	Second mixer	1/2 6U8A	CR1	Power rectifier	1N1084
V3B	Vfo isolation amplifier	1/2 6U8A	CR2	Power rectifier	1N1084
V4	First i-f amplifier	6BA6	CR3	Bias rectifier	50 ma selenium
V5	Second i-f amplifier	6BA6	CR301	Frequency shift switch	1N34A
V6A	Product detector	1/2 6U8A	F1	Power supply fuse	2 amperes
V6B	Beat-frequency oscillator	1/2 6U8A			
V7	AM detector, avc rectifier, a-f amplifier	6AT6			

5.6 AVAILABLE ACCESSORIES.

TABLE 5-2. AVAILABLE ACCESSORIES

ITEM	FUNCTION	COLLINS PART NUMBER
136A-1 Noise Blanker	Eliminates noise pulses.	522 1582 00
F455Q-5 Filter	0.5 kc band pass for CW.	526 9367 00
455.8-Kc Crystal	BFO.	290 8707 00
312B-3 Speaker Box	Station speaker.	522 1166 00
312B-4 Station Control	Speaker, phone patch, directional wattmeter, and station control switches.	522 1167 00
516E-1 DC Power Supply	Mobile power supply for 12-volt source. Supplies power for both 32S-1 and 75S-1.	522 0846 005
516E-2 DC Power Supply	Mobile power supply for 24-volt source. Supplies power for both 32S-1 and 75S-1.	522 0846 00
351E-1 Mounting Plate	Table mount for 75S-1/32S-1.	522 1479 00
351E-2 Mounting Plate	Table mount for 312B-4/516F-2.	522 1480 00
351E-3 Mounting Plate	Table mount for 312B-3.	522 1481 00
Extra crystals	Additional band coverage.	See section VI, Parts List.

SECTION VI PARTS LIST

75S-1 Receiver

ITEM	DESCRIPTION	COLLINS PART NO.
	75S-1 RECEIVER	522 1168 00
C1,C2,C81	CAPACITOR, FIXED, MICA: 510 uuf ±5%; 300 vdcw	912 2867 00
C3,C5,C7,C16, C18,C20,C22,C61, C69,C71,C73,C75, C76	CAPACITOR, VARIABLE, CERAMIC: 8 to 50 uuf, 350 vdcw	917 1075 00
C4,C95	CAPACITOR, FIXED, MICA: 240 uuf ±5%; 500 vdcw	912 2843 00
C6	CAPACITOR, FIXED, MICA: 100 uuf ±5%; 500 vdcw	912 2816 00
C8,C97	CAPACITOR, FIXED, PAPER: 0.1 uf +20% -10%; 200 vdcw	931 0165 00
C9,C10,C23	CAPACITOR, VARIABLE, CERAMIC: 5 to 25 uuf, 350 vdcw	917 1073 00
C11,C14,C32,C37, C49,C77,C90,C105	CAPACITOR, FIXED, CERAMIC: 1000 uuf +100% -20%; 500 vdcw	913 3009 00
C12,C51	CAPACITOR, FIXED, CERAMIC: 1.0 uuf ±1/4 uuf; 500 vdcw	916 0070 00
C13,C15,C25,C30, C31,C38,C40,C42, C43,C45,C48,C52, C54,C55,C57,C58, C62,C65, (Cont)	CAPACITOR, FIXED, CERAMIC: 10,000 uuf +100% -20%; 500 vdcw	913 3013 00

ITEM	DESCRIPTION	COLLINS PART NO.
(Cont) C66,C80, C85 thru C89, C98 thru C101, C104,C109 thru C119, C96 C17	CAPACITOR, FIXED, CERAMIC: 10,000 uuf +100% -20%; 500 vdcw	913 3013 00
C19,C33,C70	CAPACITOR, FIXED, MICA: 510 uuf ±2%; 300 vdcw	912 2866 00
C21,C74	CAPACITOR, FIXED, MICA: 220 uuf ±5%; 500 vdcw	912 2837 00
C24	CAPACITOR, FIXED, MICA: 68 uuf ±10%; 500 vdcw	912 2805 00
C26	PART OF T1	
C27,C78,C93	PART OF T1	
C28	CAPACITOR, FIXED, MICA: 15 uuf ±10%; 500 vdcw	912 2760 00
C29	PART OF L4	
C34,C72	PART OF T1	
C35	CAPACITOR, FIXED, MICA: 130 uuf ±5%; 500 vdcw	912 2825 00
C36	PART OF T7	
C39	PART OF T7	
C41,C63,C64,C94	PART OF L6	
C44	CAPACITOR, FIXED, MICA: 100 uuf ±10%; 500 vdcw	912 2817 00
C46	PART OF T2	
	CAPACITOR, FIXED, MICA: 10 uuf ±10%; 500 vdcw	912 2754 00

SECTION VI

Parts List

75S-1 Receiver

ITEM	DESCRIPTION	COLLINS PART NO.	ITEM	DESCRIPTION	COLLINS PART NO.
C50,C102	CAPACITOR, FIXED, PAPER: 0.05 uf $\pm 30\%$ -10%; 200 vdcw	931 0163 00	R15	RESISTOR, FIXED, COMPOSITION: 15K ohms $\pm 10\%$; 1 w	745 3401 00
C53,C84,C106	CAPACITOR, FIXED, MICA: 470 uuf $\pm 10\%$; 300 vdcw	912 2865 00	R17,R27	RESISTOR, FIXED, COMPOSITION: 100 ohms $\pm 10\%$; 1/2 w	745 1310 00
C56	CAPACITOR, FIXED, DRY ELECTROLYTIC: 100 uf $-10\% +75\%$; 6 vdcw	183 1782 00	R36,R46	RESISTOR, FIXED, COMPOSITION: 1.0 megohm $\pm 10\%$; 1/2 w	745 1478 00
C59	CAPACITOR, FIXED, DRY ELECTROLYTIC: 3 section, 40 uf ea; $-10\% +40\%$; 150 vdcw	183 1701 00	R25, R67	RESISTOR, FIXED, COMPOSITION: 1200 ohms $\pm 10\%$; 1/2 w	745 1356 00
C60	CAPACITOR, FIXED, DRY ELECTROLYTIC: 40 uf $-10\% +100\%$; 150 vdcw	183 1044 00	R26	RESISTOR, FIXED, COMPOSITION: 820 ohms $\pm 10\%$; 1/2 w	745 1349 00
C67,C82	CAPACITOR, FIXED, MICA: 20 uuf $\pm 10\%$; 500 vdcw	912 2766 00	R29,R32	RESISTOR, FIXED, COMPOSITION: 6800 ohms $\pm 10\%$; 1/2 w	745 1387 00
C79	CAPACITOR, FIXED, MICA: 150 uuf $\pm 10\%$; 500 vdcw	912 2829 00	R31	RESISTOR, VARIABLE, COMPOSITION: 500K ohms $\pm 30\%$; 1/4 w	376 7401 00
C83	CAPACITOR, FIXED, MICA: 120 uuf $\pm 10\%$; 500 vdcw	912 2823 00	R33	RESISTOR, FIXED, COMPOSITION: 330 ohms $\pm 10\%$; 1/2 w	745 1331 00
C91	PART OF L4		R40	RESISTOR, FIXED, COMPOSITION: 68K ohms $\pm 10\%$; 1/2 w	745 1429 00
C92	CAPACITOR, FIXED, CERAMIC: 3 uuf $\pm 1/4$; 500 vdcw	916 0144 00	R41	PART OF P1	
C103	PART OF T8		R42	RESISTOR, FIXED, COMPOSITION: 680 ohms $\pm 10\%$; 1/2 w	745 1345 00
C107	CAPACITOR, FIXED, DRY ELECTROLYTIC: 10 uf $-10\% +100\%$; 150 vdcw	183 1040 00	R47	RESISTOR, FIXED, COMPOSITION: 2.2 megohms $\pm 10\%$; 1/2 w	745 1492 00
C108	PART OF T8		R20, R50, R68	RESISTOR, FIXED, COMPOSITION: 4700 ohms $\pm 10\%$; 1/2 w	745 1380 00
CR1,CR2	DIODE: type 1N1084	353 1567 00	R51	RESISTOR, FIXED, COMPOSITION: 470 ohms $\pm 10\%$; 2 w	745 5638 00
CR3	RECTIFIER, METALLIC: selenium, single phase half wave	353 0153 00	R52	RESISTOR, FIXED, COMPOSITION: 3900 ohms $\pm 10\%$; 2 w	745 5677 00
DS1	LAMP, INCANDESCENT: 6.3 v, 0.15 amp; 1-1/8 in. lg; clear	262 3240 00	R54	RESISTOR, FIXED, COMPOSITION: 27K $\pm 10\%$; 1/2 w	745 1412 00
DS2	PART OF M1	262 3240 00	R55,R58	RESISTOR, FIXED, COMPOSITION: 12K ohms $\pm 10\%$; 1/2 w	745 1398 00
F1	FUSE, CARTRIDGE: 2 amp, 250 v dc, ferrule terminal	264 4070 00	R56	RESISTOR, VARIABLE, COMPOSITION: 10K ohms $\pm 30\%$; 1/4 w	376 7402 00
FL1	FILTER, BAND PASS: optional, 455.0 kc oper freq, 500 cps bandwidth; Collins Type F455Q-5	526 9367 00	R57	RESISTOR, VARIABLE, COMPOSITION: 500 ohms $\pm 30\%$; 0.2 w	376 4603 00
FL2	FILTER, BAND PASS: 455.0 kc oper freq, 2,125 kc bandwidth, 17,000 ohms input and output; Collins	526 9337 00	R59	RESISTOR, FIXED, COMPOSITION: 1000 ohms $\pm 10\%$; 2 w	745 5652 00
J1 thru J5,J8,J10, J11,J12 J6,J9	JACK, TIP: accommodates 1/8 in. plug; ceramic insulation; brass contacts	360 0088 00	R61,R66	RESISTOR, FIXED, COMPOSITION: 470 ohms $\pm 10\%$; 1/2 w	745 1338 00
J13	JACK, TELEPHONE: spring leaf contacts, J1-1B contact arrangement	360 0136 00	R62	RESISTOR, FIXED, COMPOSITION: 10K $\pm 10\%$; 2 w	745 5694 00
L1	CONNECTOR, RECEPTACLE, ELECTRICAL: 11 male pin contacts	372 1759 00	S1	SWITCH, ROTARY: 1 circuit, 14 position, 1 section, 1 moving, 16 fixed contacts	259 0981 00
L2	NOT USED		S2,S3,S4	SWITCH SECTION, ROTARY: 1 circuit, 14 position; 1 moving, 10 fixed contacts	269 2027 00
L3	COIL, RADIO FREQUENCY: 15 turns, single layer wound, #28 AWG wire, phenolic core; Collins	543 8025 002	S5	SWITCH SECTION, ROTARY: 1 section, 4 positions, 3 circuit; 12 fixed, 3 moving contacts	259 0949 00
L4	NOT USED		S6	SWITCH SECTION, ROTARY: 2 circuit, 12 position; 2 moving, 11 fixed contacts	269 1999 00
L5,L9,L10	TUNING UNIT, RADIO FREQ: 2.945 to 3,165 kc, 1 adjustment included with T1 as set	278 1712 00	S7	SWITCH SECTION, ROTARY: 2 circuit, 12 position; 2 moving, 11 fixed contacts	269 1998 00
L6	COIL, RADIO FREQUENCY: 3 pi wound, 225 turns ea, 2.0 mh, #40 AWG	240 0084 00	S8	SWITCH SECTION, ROTARY: 2 circuit, 12 position; 2 moving, 10 fixed contacts	269 2025 00
L6	TUNING UNIT, RADIO FREQUENCY: freq range 440 kc to 470 kc	278 0277 00	S9	SWITCH SECTION, ROTARY: 3 circuit, 12 position; 3 moving, 12 fixed contacts	269 2024 00
L7	COIL, RADIO FREQUENCY: single layer wound, 10 uh inductance	240 0149 00	S11	SWITCH SECTION, ROTARY: 1 circuit, 4 position, 30° detent	259 1129 00
L8	NOT USED		T1	TRANSFORMER, I-F: 2.945 to 3.165 kc included with L4 as a set	278 1712 00
L11,L13	COIL, RADIO FREQUENCY: 3 universal wound pi sections; 112 turns per section; copper wire #36 AWG; 500 uh	240 0073 00	T2	TRANSFORMER, I-F: 455 kc	278 0276 00
L12	REACTOR: 3.0 hy, 0.120A, 100 ohms resistance	668 0020 00	T3	TRANSFORMER, AUDIO FREQUENCY: pri 2500 ohms; sec 500 ohms and 4 ohms	667 0302 00
M1	METER: Carrier level 0-1 Ma, calibrated in S-units	458 0044 00	T4	TRANSFORMER, POWER: pri 115 v, 50/60 cps, sec 1 overall 220 v CT; sec 2, 6.3 v	662 0301 00
P1	XTAL OSC LOAD: 100 ohm load and plug assembly; Collins	544 3143 002	T5	TRANSFORMER, R-F: 3.4 to 30 mc; Collins	543 8120 002
P2 thru P4	NOT USED		T6	TRANSFORMER, R-F: 3.4 to 30 mc; Collins	543 8122 002
P5	CABLE ASSEMBLY: 3 conductor #18 AWG, 2 male contacts	426 1464 00	T7	TUNING UNIT, R-F: 440 to 470 kc freq range	278 0278 00
P6	CONNECTOR, PLUG, ELECTRICAL: 11 female socket contacts, Amphenol 78-S11T or Cinch 13786	372 1759 00	T8	TUNING UNIT, R-F: same as T7	278 0278 00
P7 thru P13	NOT USED		V1,V9	ELECTRON TUBE: type 6DC6	255 0226 00
R1,R24,R63	RESISTOR, FIXED, COMPOSITION: 3.3 megohms $\pm 10\%$; 1/2 w	745 1499 00	V2,V3,V6	ELECTRON TUBE: type 6U8A	255 0328 00
R2,R16,R30,R53	RESISTOR, FIXED, COMPOSITION: 47K ohms $\pm 10\%$; 1/2 w	745 1422 00	V4,V5	ELECTRON TUBE: type 6BA6	255 0185 00
R3,R5,R6,R9,R10, R14,R18,R22,R38, R45,R49	RESISTOR, FIXED, COMPOSITION: 1000 ohms $\pm 10\%$; 1/2 w	745 1352 00	V7	ELECTRON TUBE: type 6AT6	255 0190 00
R4,R23,R35,R37, R48	RESISTOR, FIXED, COMPOSITION: 220K ohms $\pm 10\%$; 1/2 w	745 1450 00	V8	ELECTRON TUBE: type 6BF5	255 0330 00
R7	RESISTOR, FIXED, COMPOSITION: 68K ohms $\pm 10\%$; 1/2 w	745 1429 00	Y1 thru Y12	CRYSTALS: MIL-C-3098 type CR18/U, holder type HC-6 $\pm 0.005\%$ freq tolerance	
R8,R12,R21	RESISTOR, FIXED, COMPOSITION: 68 ohms $\pm 10\%$; 1/2 w	745 1303 00	Y1	CRYSTAL FREQUENCY FOR OPERATING FREQUENCY	
R11,R19,R28,R34, R39,R43,R44,R60, R64	RESISTOR, FIXED, COMPOSITION: 100K ohms $\pm 10\%$; 1/2 w	745 1436 00	Y2	6.555 mc 3.4-3.6 mc	290 8728 00
R13	RESISTOR, VARIABLE, COMPOSITION: 250 ohms $\pm 30\%$; 0.2 w	376 4602 00	Y3	6.755 mc 3.6-3.8 mc	290 8729 00
			Y4	6.955 mc 3.8-4.0 mc	290 8730 00
			Y5	10.155 mc 7.0-7.2 mc	290 8731 00
			Y6	10.355 mc* 7.2-7.4 mc	290 8732 00
			Y7	8.5775 mc 14.0-14.2 mc	290 8733 00
			Y8	8.6775 mc 14.2-14.4 mc	290 8734 00
			Y9	8.9775 mc 14.8-15.0 mc	290 8735 00
			Y10	12.0775 mc 21.0-21.2 mc	290 8736 00
			Y11	12.1775 mc 21.2-21.4 mc	290 8737 00
			Y12	12.2775 mc 21.4-21.6 mc	290 8738 00
					290 8691 00

75S-1 Receiver

ITEM	DESCRIPTION	COLLINS PART NO.	ITEM	DESCRIPTION	COLLINS PART NO.
Y13	CRYSTAL FREQUENCY FOR NOT FURNISHED	OPERATING FREQUENCY	C302	CAPACITOR, FIXED, MICA: 1100 uuf ±2%, 500 vdcw; Electromotive type DM-20	912 1747 00
Y14	NOT FURNISHED		C303	CAPACITOR, FIXED, MICA: 3000 uuf ±10%, 500 vdcw; Electromotive type DM-20	912 1748 00
	CRYSTALS: MIL-C-3098 type CR46/U, holder type HC-6/U ±0.01% frequency tolerance		C304	CAPACITOR, FIXED, MICA: 200 uuf ±2%, 500 vdcw; Electromotive no. VCM15E201G	912 0514 00
Y15	453.650 kc	290 8705 00	C305	CAPACITOR, FIXED, CERAMIC: 100 uuf ±2%, 500 vdcw; Centralab	913 0074 00
Y16	456.350 kc	290 8706 00	C306	CAPACITOR, FIXED, CERAMIC: 100 uuf ±2%, 500 vdcw; Centralab no. DA933-017 (X)	913 0246 00
Y17	100.000 kc	290 8454 00	C307	CAPACITOR, FIXED, CERAMIC: dual section, ea section 0.01 uf plus 60 minus 40%, 250 vdcw; Centralab type DA148	913 2096 00
70K-2 Oscillator	Consisting of following parts:	522 1093 00	C308	CAPACITOR, FIXED, CERAMIC: 0.02 uf plus 60 minus 40%, 250 vdcw; Centralab type DA148	913 2097 00
C301	Select per operational requirement CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-002 (X)	913 0053 00	CR301	DIODE: germanium, type 1N34A; Sylvania Electric	353 0103 00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-006 (X)	913 0054 00	L304	COIL, RADIO FREQUENCY: single layer wound, magnet wire, 3.30 uh; Jeffers Electronics type 102	240 0695 00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-007 (X)	913 0055 00	R301, R303	RESISTOR, FIXED, COMPOSITION: 0.10 megohms ±10%, 1/2 w; MIL RC20GF104K	745 1436 00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-008	913 0056 00	R302	RESISTOR, FIXED, COMPOSITION: 82.000 ohms ±10%, 1/2 w; MIL RC20GF823K	745 1433 00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA934-017 (X)	913 0057 00	T301	TRANSFORMER, RADIO FREQUENCY: pri 380 uhy nom, 790 kc; sec 2.7 uhy nom, 2.6 mc; Comm. Coil	240 0665 00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA934-018 (X)	913 0058 00	V301	ELECTRON TUBE: 6AU6 type; G.E.	255 0202 00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±10%, 500 vdcw; Centralab no. DA934-023 (X)	913 0232 00			
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±10%, 500 vdcw; Centralab no. DA934-024 (X)	913 0233 00			
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±10%, 500 vdcw; Centralab no. DA934-025 (X)	913 0234 00			

GENERAL COVERAGE CRYSTALS AVAILABLE

CRYSTAL FREQUENCY (kc)	FOR OPERATING FREQUENCY (mc)	PART NUMBER	CRYSTAL FREQUENCY (kc)	FOR OPERATING FREQUENCY (mc)	PART NUMBER	CRYSTAL FREQUENCY (kc)	FOR OPERATING FREQUENCY (mc)	PART NUMBER
6555.000	3.4-3.6	290 9009 00	8277.500	13.4-13.6	290 9059 00	12477.500	21.8-22.0	290 9101 00
6755.000	3.6-3.8	290 9010 00	8377.500	13.6-13.8	290 9060 00	12577.500	22.0-22.2	290 9102 00
6955.000	3.8-4.0	290 9011 00	8477.500	13.8-14.0	290 9061 00	12677.500	22.2-22.4	290 9103 00
7155.000	4.0-4.2	290 9012 00	8577.500	14.0-14.2	290 9062 00	12877.500	22.4-22.6	290 9104 00
7355.000	4.2-4.4	290 9013 00	8677.500	14.2-14.4	290 9063 00	12977.500	22.6-22.8	290 9105 00
7555.000	4.4-4.6	290 9014 00	8777.500	14.4-14.6	290 9064 00	13077.500	22.8-23.0	290 9106 00
7755.000	4.6-4.8	290 9015 00	8877.500	14.6-14.8	290 9065 00	13177.500	23.2-23.4	290 9108 00
7955.000	4.8-5.0	290 9016 00	8977.500	14.8-15.0	290 9066 00	13277.500	23.4-23.6	290 9109 00
9755.000	6.6-6.8	290 9025 00	9077.500	15.0-15.2	290 9067 00	13377.500	23.6-23.8	290 9110 00
9955.000	6.8-7.0	290 9026 00	9177.500	15.2-15.4	290 9068 00	13477.500	23.8-24.0	290 9111 00
10155.000	7.0-7.2	290 9027 00	9277.500	15.4-15.6	290 9069 00	13577.500	24.0-24.2	290 9112 00
10355.000	7.2-7.4	290 9028 00	9377.500	15.6-15.8	290 9070 00	13677.500	24.2-24.4	290 9113 00
10555.000	7.4-7.6	290 9029 00	9477.500	15.8-16.0	290 9071 00	13877.500	24.4-24.6	290 9115 00
10755.000	7.6-7.8	290 9030 00	9577.500	16.0-16.2	290 9072 00	13977.500	24.8-25.0	290 9116 00
10955.000	7.8-8.0	290 9031 00	9677.500	16.2-16.4	290 9073 00	14077.500	25.0-25.2	290 9117 00
11155.000	8.0-8.2	290 9032 00	9777.500	16.4-16.6	290 9074 00	14177.500	25.2-25.4	290 9118 00
11355.000	8.2-8.4	290 9033 00	9877.500	16.6-16.8	290 9075 00	14277.500	25.4-25.6	290 9119 00
11555.000	8.4-8.6	290 9034 00	9977.500	16.8-17.0	290 9076 00	14377.500	25.6-25.8	290 9120 00
11755.000	8.6-8.8	290 9035 00	10077.500	17.0-17.2	290 9077 00	14577.500	25.8-26.0	290 9121 00
11955.000	8.8-9.0	290 9036 00	10177.500	17.2-17.4	290 9078 00	14677.500	26.0-26.2	290 9122 00
12155.000	9.0-9.2	290 9037 00	10277.500	17.4-17.6	290 9079 00	14877.500	26.2-26.4	290 9123 00
12355.000	9.2-9.4	290 9038 00	10377.500	17.6-17.8	290 9080 00	14977.500	26.4-26.6	290 9124 00
12555.000	9.4-9.6	290 9039 00	10477.500	17.8-18.0	290 9081 00	15077.500	26.6-26.8	290 9125 00
12755.000	9.6-9.8	290 9040 00	10577.500	18.0-18.2	290 9082 00	15177.500	27.0-27.2	290 9127 00
12955.000	9.8-10.0	290 9041 00	10677.500	18.2-18.4	290 9083 00	15277.500	27.2-27.4	290 9128 00
13155.000	10.0-10.2	290 9042 00	10777.500	18.4-18.6	290 9084 00	15377.500	27.6-27.8	290 9130 00
13355.000	10.2-10.4	290 9043 00	10877.500	18.6-18.8	290 9085 00	15477.500	27.8-28.0	290 9131 00
13555.000	10.4-10.6	290 9044 00	10977.500	18.8-19.0	290 9086 00	15527.500	27.9-28.1	290 9142 00
13755.000	10.6-10.8	290 9045 00	11077.500	19.0-19.2	290 9087 00	15577.500	28.0-28.2	290 9132 00
13955.000	10.8-11.0	290 9046 00	11177.500	19.2-19.4	290 9088 00	15677.500	28.1-28.3	290 9143 00
14155.000	11.0-11.2	290 9047 00	11277.500	19.4-19.6	290 9089 00	15727.500	28.2-28.4	290 9133 00
14355.000	11.2-11.4	290 9048 00	11377.500	19.6-19.8	290 9090 00	15777.500	28.3-28.5	290 9144 00
14555.000	11.4-11.6	290 9049 00	11477.500	19.8-20.0	290 9091 00	15877.500	28.4-28.6	290 9134 00
14755.000	11.6-11.8	290 9050 00	11577.500	20.0-20.2	290 9092 00	15927.500	28.6-28.8	290 9135 00
14955.000	11.8-12.0	290 9051 00	11677.500	20.2-20.4	290 9093 00	15977.500	28.7-28.9	290 9145 00
7577.500	12.0-12.2	290 9052 00	11777.500	20.4-20.6	290 9094 00	16027.500	28.8-29.1	290 9146 00
7677.500	12.2-12.4	290 9053 00	11877.500	20.6-20.8	290 9095 00	16127.500	29.0-29.2	290 9137 00
7777.500	12.4-12.6	290 9054 00	11977.500	20.8-21.0	290 9096 00	16177.500	29.1-29.3	290 9147 00
7877.500	12.6-12.8	290 9055 00	12077.500	21.0-21.2	290 9097 00	16227.500	29.2-29.4	290 9138 00
7977.500	12.8-13.0	290 9056 00	12177.500	21.2-21.4	290 9098 00	16277.500	29.3-29.5	290 9148 00
8077.500	13.0-13.2	290 9057 00	12277.500	21.4-21.6	290 9099 00	16327.500	29.4-29.6	290 9139 00
8177.500	13.2-13.4	290 9058 00	12377.500	21.6-21.8	290 9100 00	16477.500	29.5-29.7	290 9149 00

INDEX

INDEX

	A	O	Page
Accessories	13	Operation Requirements	11
A-F Circuits (description)	7	Operation in Transceiver Service with	
AM Tuning	3	32S-1 Transmitter	4
		Operation Outside Amateur Bands	3
		Oscillator Circuits (description)	7
	B		
Band-Pass (2.955 to 3.155 kc)			
I-F Alignment	10	Parts List	13
Block Diagram (description)	7		
	C		
Cabling	1	R-F Circuit Alignment	11
Calibration	3	R-F Circuits (description)	7
CW Tuning	3	Resistance Measurements	9
	F		
Frequency Coverage	11	Semiconductor Complement	12
Fuse Complement	12	Signal Tracing	8
	I	Single-Sideband Tuning	3
I-F Circuits (description)	7	S-Meter Adjustments	11
Initial Checks	1	Specifications	11
Installation Instructions	1		
	L		
Low-Frequency I-F (455 kc) Alignment	10	Tube Complement	12
	M		
Mounting	1	Unpacking	1
		Use of 75S with Other Collins Transmitters	5
	V		
		VFO Sideband Frequency Shift Alignment	11
		Voltage Measurements	9

SECTION VII ILLUSTRATIONS

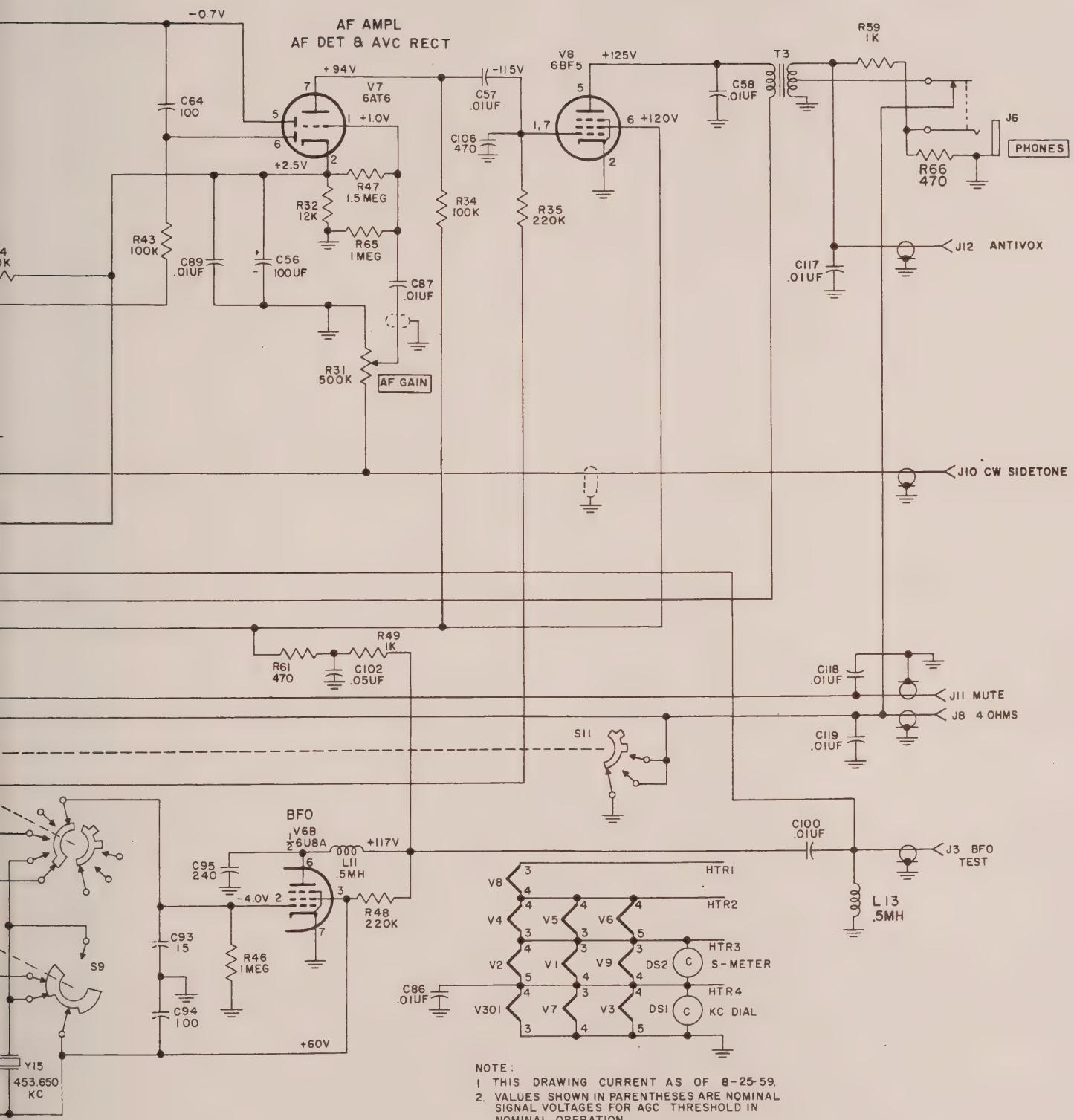


Figure 7-1. 75S-1 Receiver, Schematic Diagram

INDEX**A**

	Page
Accessories	13
A-F Circuits (description)	7
AM Tuning	3

B

Band-Pass (2.955 to 3.155 kc)	
I-F Alignment	10
Block Diagram (description)	7

C

Cabling	1
Calibration	3
CW Tuning	3

F

Frequency Coverage	11
Fuse Complement	12

I

I-F Circuits (description)	7
Initial Checks	1
Installation Instructions	1

L

Low-Frequency I-F (455 kc) Alignment	10
--	----

M

Mounting	1
--------------------	---

O

	Page
Operation Requirements	11
Operation in Transceiver Service with 32S-1 Transmitter	4
Operation Outside Amateur Bands	3
Oscillator Circuits (description)	7

P

Parts List	13
----------------------	----

R

R-F Circuit Alignment	11
R-F Circuits (description)	7
Resistance Measurements	9

S

Semiconductor Complement	12
Signal Tracing	8
Single-Sideband Tuning	3
S-Meter Adjustments	11
Specifications	11

T

Tube Complement	12
---------------------------	----

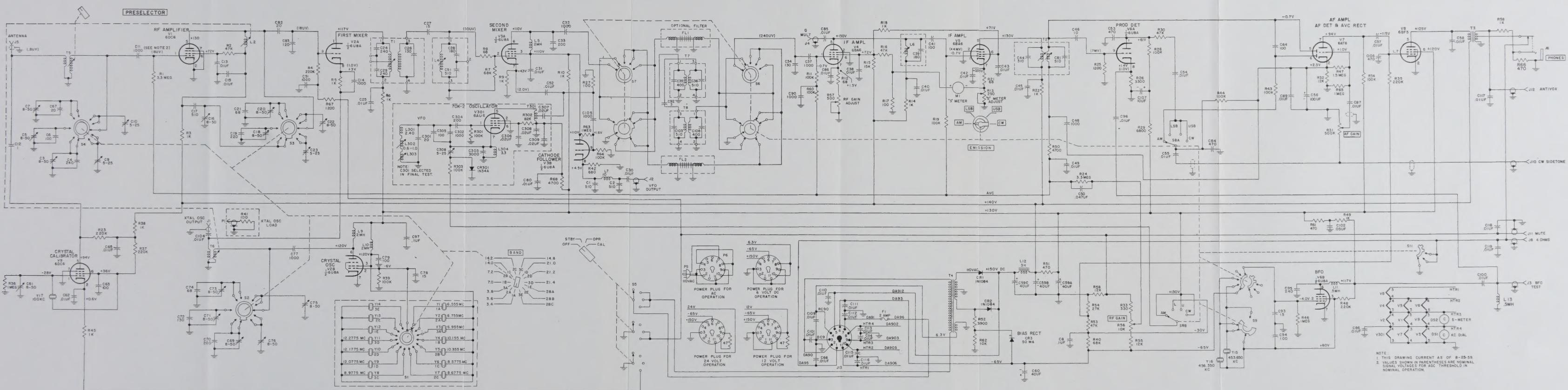
U

Unpacking	1
Use of 75S with Other Collins Transmitters . .	5

V

VFO Sideband Frequency Shift Alignment . . .	11
Voltage Measurements	9

SECTION VII ILLUSTRATIONS



7-1 758-1 Receiver Schematic Diagram

HOOK-UP WIRE CODE

The characteristics of the hook-up wire used in this equipment are indicated by groups of symbols on the diagrams. Each symbol group consists of a maximum of three letters followed by a maximum of three numerals. When three letters are used the first indicates the type of wire, the second represents the size of wire, and the third is the letter "S", used only when the wire is shielded. When two letters are used, the first and second letters indicate either the type and size of wire or the size of wire and shielding, respectively. When one letter is used it indicates the wire size only. The first numeral indicates the color of the wire body and the second and third numerals, if any, represent the colors of tracers, all numerals being in accordance with the standard EIA and MIL-W-16878 color code.

The symbols are assigned according to the following table.

TYPE OF WIRE CODE		SIZE OF WIRE CODE		COLOR CODE	
LETTER	TYPE OF WIRE	LETTER	SIZE	NUMBER OR LETTER	COLOR
A	Cotton Braid Over Plastic (Formerly AN-J-C-48)	A	#22 AWG	0	Black
B	Busbar, Round Tinned	B	#20	1	Brown
C	MIL-W-16878 Type B (#20 and Larger) (600 Volts)	C	#18	2	Red
D	Miniature Wire, MIL-W-16878 Type B (#22 and Smaller)	D	#16	3	Orange
E		E	#14	4	Yellow
F	Extra Flexible Varnished Cambric	F	#12	5	Green
G		G	#10	6	Blue
H	Kel-F (Monochlorotrifluoroethylene)	H	#8	7	Violet
J		J	#6	8	Gray (Slate)
K	Neon Sign Cable (15,000 Volts)	K	#4	9	White
L	Silicone	L	#2	a	Clear
M		M	#1	b	Tan
N	Single Conductor Stranded (Not Rubber Covered)	N	#0	c	Pink
P	Single Conductor Stranded (Rubber Covered)	P	#00	d	Maroon
Q		Q	#000	e	Light Green
R	MIL-W-16878 Type C (1000 Volts)	R	#0000	f	Light Blue
T	Teflon, MIL-W-16878 Type E (600 Volts)	T	#28		
V	MIL-W-16878 Type D (3000 Volts)	V	#26		
W	Teflon, MIL-W-16878 Type EE (1000 Volts)	W	#24		
X		X	#19		
Y		Y	#30		
Z	Acetate Yarn, Telephone Type	Z			

EXAMPLES

MIL TYPE C, #22AWG, UNSHIELDED WIRE, WHITE WITH RED AND GREEN TRACERS:

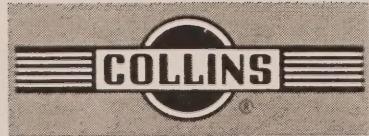
R	A	9	25	4-1/4
Type of Wire	Size of Wire	Color of Body	Color of Tracers --	Length of Wire in Inches (Includes Stripping & Tinning)

MIL TYPE C, #16AWG, SHIELDED WIRE (SINGLE), WHITE WITH RED AND GREEN TRACERS:

R	D	S	9	25	4-1/4
Type of Wire	Size of Wire	Shielded	Color of Body	Color of Tracers --	Length of Wire in Inches (Includes Stripping & Tinning)

MIL TYPE B, #22AWG, SHIELDED WIRE (MULTIPLE), WHITE, AND WHITE WITH RED TRACER:

D	A	S	(9)	(92)	4-1/4
Type of Wire	Size of Wire	Shielded	First Conductor	Second Conductor --	Length of Wire in Inches (Includes Stripping & Tinning)



COLLINS RADIO COMPANY